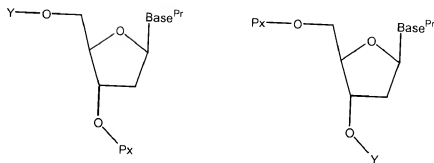


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Docket No.: 2719,2001-000  
 Title: Synthesis of Oligonucleotide Array  
 Inventor: Glenn H. McGall

**Figure 1A**

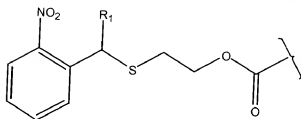


Px = phosphoramidite, H-phosphonate or phosphate

Y = one of the general structures in Figures 1B-1I ( $R_1$  = -H, alkyl or aryl):

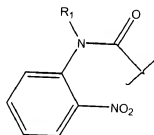
**Figure 1B**

o-nitrobenzylthioethoxycarbonyl (NBTEOC)



**Figure 1C**

o-nitrophenylaminocarbonyl (NPAC)

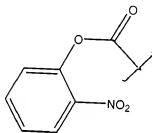


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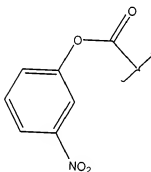
**Figure 1D**

o-nitrophenoxyacetyl (N2POC)



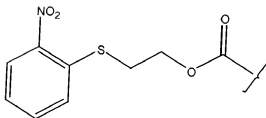
**Figure 1E**

m-nitrophenoxyacetyl (N3POC)



**Figure 1F**

o-nitrophenylthioethoxyacetyl

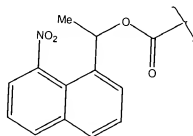


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 Inventor: Glenn H. McGall

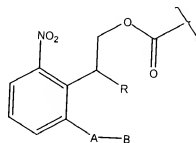
**Figure 1G**

$\alpha$ -methyl-8-nitronaphthylmethoxycarbonyl (MeNMOC)



**Figure 1H**

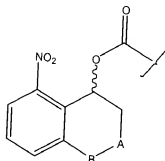
6-substituted 2-(o-nitrophenyl)-2-propyloxycarbonyl (6NPPOC)



A = O, S, N-alkyl, N-aryl,  $(CH_2)_n$ , where n = 0 to about 3  
 B = aprotic weakly basic group (e.g., N-alkylimidazole)

**Figure 1I**

cyclic o-nitrobenzyloxycarbonyl



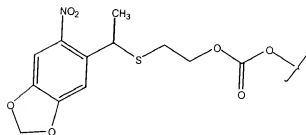
A = O, S, N-alkyl, N-aryl,  $(CH_2)_n$ , where n = 0 to about 3  
 B = aprotic weakly basic group (e.g., N-alkylimidazole)

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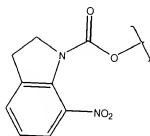
Docket No.: 2719.2001-000  
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**Figure 2A**

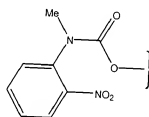
TEMPOC



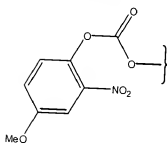
NIOC



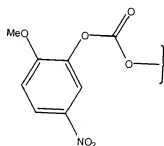
NAMOC



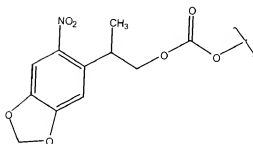
MeN2POC



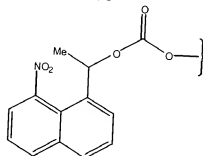
MeN3POC



NP2POC



NNEOC



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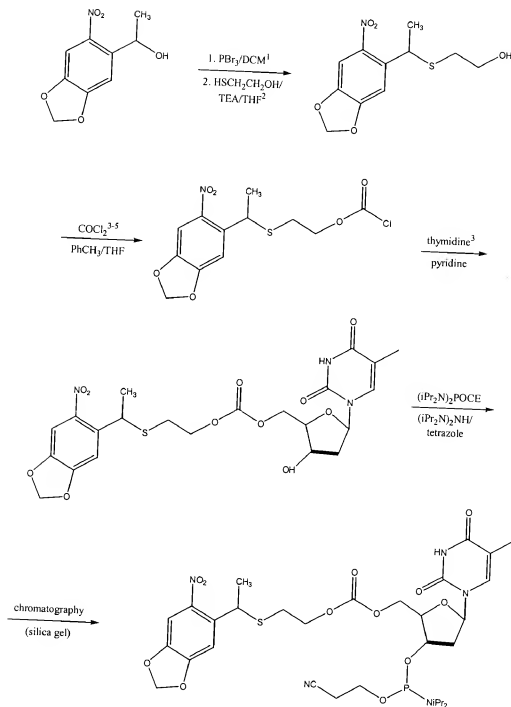
**Figure 2B**  
**Coupling Efficiency Data**

	Stepwise yield	photolysis conditions
 (MeNPOC-control)	about 88 %	nonpolar solvent
	about 85 %	MeOH
	95 %	DMSO
	94 %	Nucleophilic solvent (MeOH)
	about 80 %	Nucleophilic solvent (MeOH)
	about 75 %	Nucleophilic solvent (MeOH)
	90 %	basic solvent (1 % NMI/DMSO)
	96 %	DMSO

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Figure 3

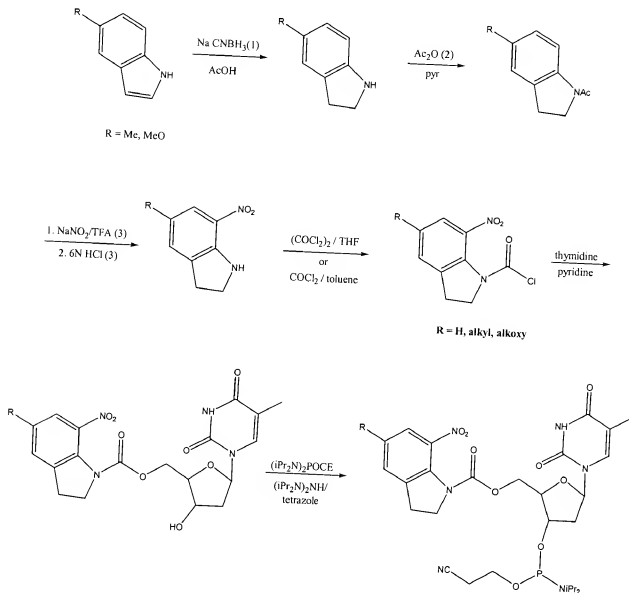
5'-TEMPOC-T-Phosphoramidite



1. Dyer, et al. JOC 64: 7988 (1999)
2. Tetrahedron Lett., 38(52), 8933-4 (1997)
3. McGill, et al. JACS 119: 5081 (1997)
4. Triphosgene may work equally well for this step.
5. Chloroformate can probably be used without purification.

Figure 4

Synthesis of NINOC-T-CEP



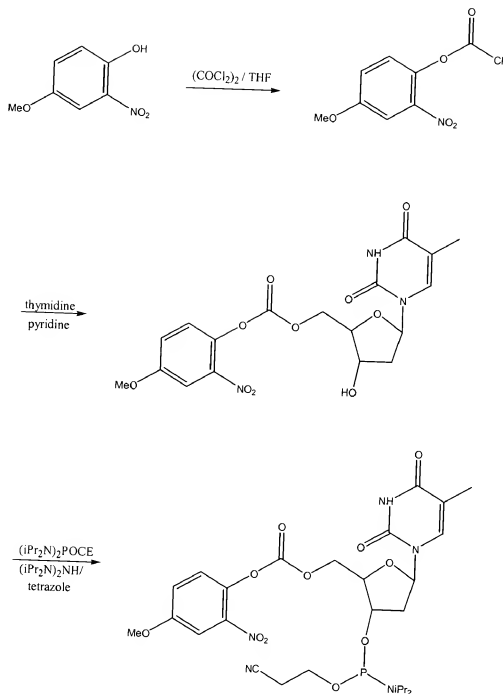
1. Bromridge, et al. (1998) *J. Med. Chem.* 41: 1598.
2. (i) Brooker, L.S., et al. (1953) *US Pat. 2,646,430*; (ii) Bockelheide, et al. (1954) *J. Org. Chem.* 19: 504.; (iii) Bennet, et al (1941) *J. Chem Soc.* 74: 244.
3. Mortensen, et al. (1996) *Org. Prep. Proc. Int.* 28: 123.

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**Figure 5**

**Me2NPOC-T-CEP**

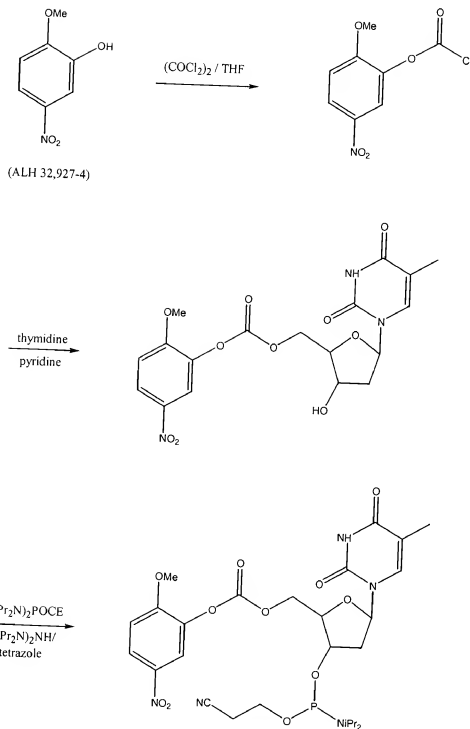




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Figure 6

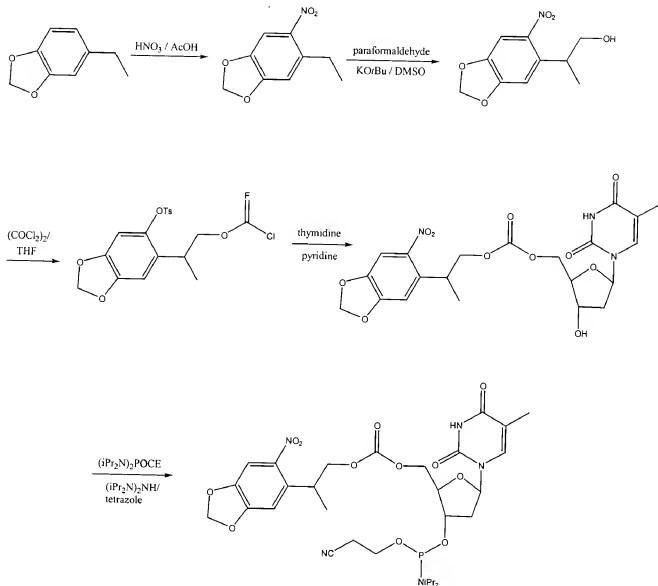
Me3NPOC-T-CEP



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Figure 7

NP2POC-T-CEP



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Docket No.: 2719.2001-000

Synthesis of Oligonucleotide Array

Inventor: Glenn H. McGall

Figure 8

NNEOC-T-CEP

